

# 2019 SANTA CRUZ FORESTRY CHALLENGE

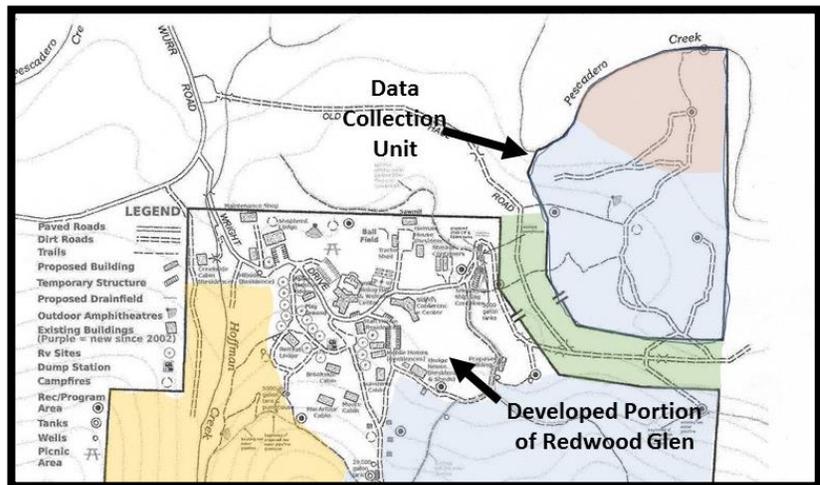
## FOCUS TOPIC QUESTION

### Introduction:

The focus topic for 2019 is ***To NTMP or not to NTMP – That is the Question.*** Students will collect data on a 20-acre forested unit in the northeast portion of the Redwood Glen property to establish some baseline statistics on the stand and assess growth potential so they can recommend whether the property should be managed under a Nonindustrial Timber Management Plan (NTMP).

### Focus Topic Fieldtrip Location:

We will walk to the northeast portion of the property, where we will locate plot centers and collect data. Here is a map of the unit. A map with plot locations will be provided upon arrival.



### Background Information:

#### History of Forest Management in the Santa Cruz Mountains

Nearly all of the old growth redwood forests of the Santa Cruz mountains were clear cut by the 1930's. The California gold rush of 1849 created a high demand for lumber in San Francisco, and the Santa Cruz mountains were relatively close by to provide lumber for building the city and for rebuilding after the 1906 earthquake. Many small sawmills were scattered throughout the area, and the lumber was transported by ship to San Francisco.

The cut over forest was left to grow into a second growth forest. In the 1970's, the newly created California Forest Practice Rules placed restrictions on harvest with the intent of managing California's state owned and private forestlands in an environmentally responsible manner. Today's limits include limits how much timber can be harvested, how much must be left behind, or retained, and the silvicultural guidelines and restrictions, which are different for different areas of the state. The Santa Cruz mountains are in the Southern Subdistrict of the Coastal Forest District and have the state's most restrictive harvest guidelines.

## Forest Inventory

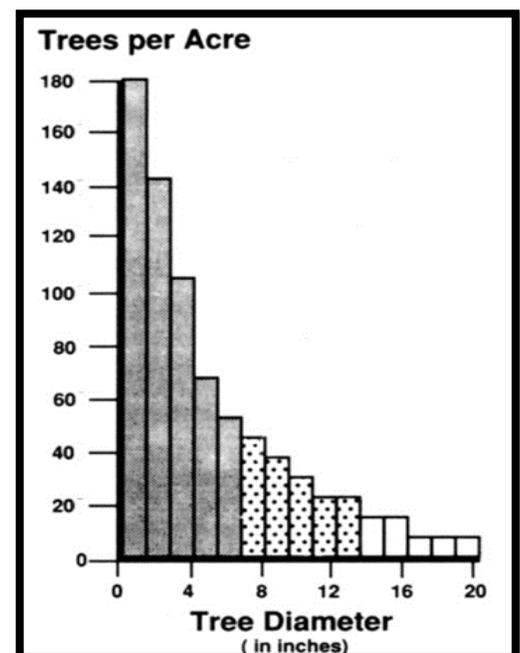
A forest inventory is a quantifiable assessment of forest resources that can help a landowner achieve desired goals such as maintaining forest health or planning timber harvests. A forest inventory will provide insights into species composition, tree density, basal area, and volume, and help document change (growth and mortality) in the forest over time.

Rather than surveying every square foot of a forest “unit”, a cruise using smaller samples of the unit provides relatively accurate information in a fraction of the time. A standard cruise design is a series of plots on equally spaced centers with a pre-determined size and protocol for collecting data. Once the data has been collected, it is assembled into a data set that includes a stand table, which is a summary of the species and sizes by diameter class, as well as a calculation of the volume of timber in board feet per acre. If annual growth rings are measured, the growth rate and percentage of volume increase over time can be calculated.

## Silviculture

“Silviculture” is the art and science of managing a stand of trees for a desired outcome. Silvicultural methods can be divided into “uneven” and “even aged” methods. In uneven aged harvesting, individual trees or small groups (up to 2 ½ acres) of trees are cut, which creates and maintains an “all aged” forest. New trees are established by natural seeding, sprouting, or planting, and the resulting forest is a mix of trees of different age and size classes. In even aged harvesting, trees are removed in larger areas (typically 20 acres) so that a new stand of trees that are all the same age is planted.

Even aged silviculture is prohibited in the Southern Subdistrict. Single tree selection is the preferred uneven aged harvesting method and works well here for two reasons. First, redwoods sprout from the cambium layer of the cut stump, so replanting is not required. Second, redwoods are shade tolerant, meaning that new sprouts can grow and thrive in the shade of larger trees. In order to maintain a well-stocked forest at all times, no more than 60% of the trees can be harvested in one entry, and the basal area cannot drop lower than 75 square feet per acre after a harvest. In an all-aged forest, there are many small trees and only a few big trees. Foresters call this curve the “reversed J” curve which is indicative of uneven-aged forests.



## Timber Harvest Plans and Nonindustrial Timber Management Plans

In order to harvest timber in a typical industrial forest setting, a document called a Timber Harvest Plan (THP) is prepared by a Registered Professional Forester (RPF). The THP not only provides a plan of the logging operation, but also a detailed analysis of the potential environmental effects of the proposed operation. The lead agency in the review of THPs is the California Department of Forestry and Fire Protection (CalFire). With an effective period of 5 years and the possibility of receiving a two-year extension, the maximum life of a THP is 7 years. If the harvest is not conducted before the plan expires, the process must start from scratch.

In 1991, the state legislature amended the Forest Practice Act to create the Nonindustrial Timber Management Plan (NTMP). The purpose of the NTMP is to allow nonindustrial landowners who own less than 2,500 acres and are not primarily engaged in the manufacture of forest products to create a “forever” forest management plan which allows for the periodic harvest of trees without going through the environmental review process for each harvest. The initial cruise and harvest planning document is much more detailed, but once the NTMP is approved, all that is required to harvest is filing a Notice of Timber Operations and a 3 day waiting period.

### Landowner Goals

The primary purpose of the Redwood Glen property is to host organized groups for retreats and conferences. However, in addition to the developed area of the property, there is a large portion of the land base that is undeveloped timberland. The timber has the potential to grow and be harvested for a profit that can be invested back into the camp infrastructure. Because there are several costs associated with harvesting timber and the price paid for logs delivered to the sawmill fluctuates constantly with the market, being able to react quickly and harvest during a strong market can be the difference between barely breaking even and making a substantial profit.

In the past, Redwood Glen has hired an RPF to write and carry out two harvests using THPs in recent history, one in 2004 and one in 2011. Even though an NTMP would cost more to create than a THP, it would only have to be done once, potentially saving Redwood Glen money over the long run.

### Logging Costs

When a landowner wants to harvest timber their property, there are four types of expenses to consider, and each one varies depending on the market and government oversight. These expenses are RPF services, logging, trucking the logs to the mill, and yield taxes.

## Fieldtrip:

You will visit the northeast portion of the Redwood Glen property and will conduct a cruise of the forest to create a forest inventory. Each team will collect data on one or two 1/10<sup>th</sup> acre circular plots and the data will be combined with data from all of the plots to create a stand table and other useful metrics. Growth potential and the relative costs of preparing an NTMP versus multiple THPs will help teams determine if the expense of developing an NTMP makes sense for the property.

The information collected can be assembled to determine the following:

- Trees per acre
- Species composition
- Size class distribution
- Current volume and the rate of volume increase over the last 10 years

## Resources:

You will be given resources on a flash drive to load onto your team's computer. Use these resources, plus anything you brought with you or download from the internet, to help you answer the questions to be addressed in your presentation. Additionally, you can use photos you take during the fieldtrip and statements from foresters you work with and interview during Ask a Forester.

## Items to be Addressed in Your Presentation:

1. The past and recent harvest history and landowner goals for the unit
2. Data collection methods
3. Summary of the current stand inventory
4. Options for a future harvest document (THPs versus an NTMP)
5. Potential for income from growth, and expenses for harvests
6. Recommended harvest mechanism for future forest management

## Final Product:

Your goal is to produce a 15 minute PowerPoint presentation that **describes, in detail, the current forest inventory of the northeast unit of Redwood Glen, the options for future harvest documents, and your recommendation for a harvest mechanism for the future.** You are encouraged to use photos and information collected on the fieldtrip, interviews with resource professionals during the Challenge, and the maps, tables, and information in the resources provided. Additionally, use the judges' score sheet as a checklist to make sure you cover the items on which you will be scored.